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ABSTRACT

The purpose of this study was to examine children's recall of verbal information as a function of stimulus action and labels. The same information was presented on either a computer or a felt board. Action and labels were expected to enhance recall, regardless of the presentation medium. In both conditions, an experimenter introduced each child to the properties of objects while reading a story. In the computer condition, when the experimenter came to a targeted object, she typed its name. A speech synthesizer then either labeled the object or did not, and the object either moved across the screen or appeared in still frame. In the felt board condition, the experimenter moved and labeled objects as the computer did. After all objects were presented, they were removed from sight. The child then named all the objects that he or she could remember, and the experimenter recorded the child's responses. A total of 40 children, equally distributed among preschool and kindergarten grades, were randomly assigned to a computer or felt board condition. For each condition, the same 24 objects, structured in six sets, were presented. Both action and labels increased children's recall of verbal information, regardless of the medium in which information was presented. Results suggest that action facilitates, rather than disrupts, children's learning of verbal information. (RH)

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Presentational Features for Young Children's Recall of Information

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Abstract

Young children's recall of information presented at varying levels of action and verbal labels was compared on a computer vs. a felt board. Forty children, equally distributed by grades preschool and kindergarten, were randomly assigned to a computer or felt board condition. Within each condition, the same 24 objects (6 sets of 4 objects) were presented with or without action and verbal labels. Both action and labels increased children's recall of verbal information, regardless of the medium in which that information was presented. The results suggest that action facilitates, rather than disrupts, children's learning of verbal information.

Presentational Features for Young Children's Recall of Information

A key debate about children's verbal recall involves the role of visual presentation. While some argue that visual emphasis provides a pictorial iconic mode which can enhance children's recall of verbal content (Calvert, Huston, Watkins & Wright, 1982), others argue that visual presentation distracts young children from the verbal message, thereby producing an interference effect (Hayes & Birnbaum, 1980). More recently, researchers have suggested that action, rather than visual presentation per se, may be the underlying cause of the visual superiority effect (Gibbons, Anderson, Field & Fischer, 1986).

While the benefical or interference effects of action for recall remain controversial, verbal labels of information do improve recall, particularly at young ages (Friedrich & Stein, 1975). Labels provide a verbal linguistic mode to represent content. Young children, who rarely produce their own labels, benefit when an adult provides labels for them (Flavell, 1985).

While electronic media like computers and television often use features like action and verbal labels for information delivery, these features can also be applied to traditional educational media like felt boards. In fact, felt boards may enhance learning just as much as computers when the features that deliver the information are held constant.

The purpose of this study was to examine children's recall of verbal information as a function of action and labels. The

same information was presented on either a computer or a felt board. Action and labels were expected to enhance recall, regardless of the presentation medium.

Method

Forty children, equally distributed by grades preschool and kindergarten, were presented with 24 objects (six sets of four objects) on either a computer or a felt board. Within sets, objects crossed two levels of action (movement vs. no movement) with two levels of verbal labels (label vs. no label).

An experimenter introduced each child to the properties of objects as she read a story. As she came to a targeted object in a computer condition, the experimenter typed its name. A speech synthesizer then either labeled the object or it did not, and the object either moved across the screen or appeared in still frame. In the felt board condition, the experimenter performed the same movements and labeled objects just like the computer did.

After all objects were presented, the child closed his eyes and counted to ten while the experimenter "hid" the objects. The child then named all the objects that he could remember while the experimenter recorded these recall responses.

Results

Recall scores were computed by summing all objects that each child remembered representing each of the two by two factorial cells of action and labels. Children's recall scores, which ranged from 0-6, were submitted to a 2 (grade) x 2 (medium) x 2 (label) x 2 (action) mixed analysis of variance. Grade and

medium were between-subjects factors; action and labels were within-subjects factors.

The four factor ANOVA computed on children's recall scores yielded main effects of label, $F(1,36) = 46.62$, $p < .001$; action, $F(1,36) = 4.22$; $p < .05$; and grade, $F(1,36) = 8.12$, $p < .01$; which were qualified by a label by action by grade interaction, $F(1,36) = 7.49$, $p < .01$. As expected, children recalled more words presented with than without labels (2.63 vs. 1.75), with than without action (2.35 vs. 2.03), and at older than at younger ages (2.51 vs. 1.86). As seen in Table 1,

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Insert Table 1 about here

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kindergartners in the action and label condition recalled the most words while preschoolers in the no-action and no-label condition recalled the least words. Kindergartners in the label only condition also recalled more words than did preschoolers in the action only condition. There were no effects of medium.

Discussion

The findings support an action superiority effect by linking the presentation of action with children's recall of verbal information. Action which complements a verbal message enhances, rather than disrupts, children's recall of verbal information.

Children's verbal recall also increased when appropriate labels were presented, perhaps because a symbolic mode was provided which children could use to represent content. As young

children rarely produce their own labels (Flavell, 1985), labeling procedures seem especially important as a recall aid.

The lack of effects for medium suggests that action and verbal labels play an important role in children's recall of information if it is presented on a computer, a felt board, and as demonstrated elsewhere, in television content (Calvert, Huston & Wright, 1987). The way that information is presented may well be more important than is the medium that is used to present the message. The judicious use of features seems promising for children's learning in a wide range of mediums.

While the computer and the felt board presentations were equally effective here, the felt board did more than is typically the case while the computer did less. Rarely do teachers "animate" felt board stories, though the implication of this study is clearly to do so. In addition, the child did not interact with the computer which is one of its most powerful assets in promoting active learning (Lepper & Gurtner, 1989). Because the computer program can dictate a constant structure, the computer can continue to provide contingent feedback to a child in the absence of a teacher while the felt board cannot.

In conclusion, presentational features affect children's learning from diverse educational formats. Educators and programmers who develop software for new technologies should ask the question of how children learn, for many lessons from the past can be applied to the lessons of the future.

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Table 1.

Mean number of words recalled as a function of grade, verbal labels, and action

		PRESCHOOLERS		KINDERGARTNERS	
		VERBAL LABELS		VERBAL LABELS	
		Absent	Present	Absent	Present
ACTION	Absent	1.20^{d}	2.30^{bc}	2.10^{bc}	2.60^{b}
	Present	1.80^{c}	2.30^{bc}	2.00^{bc}	3.35^{a}

Means with different letter superscripts are significantly different at $p < .05$. Cell means are based on 20 subjects.